PHILIPS

Service Information

Communication & Security Systems

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Product	:	SQ 20, LBB 1240/00 Booster Amplifier 240W.
Service Manual	:	4822 733 24416
Reason	:	Additional type number within the SQ20 range.
Contents	:	See list

CONTENTS LIST

CHAPTER	DESCRIPTION			PAGE
1	INTRODUCTION			2
2	INPUTS			2
3	OUTPUTS			2
4	SWITCHES			2
5	INDICATORS			3
6	CONTROLS			3
7	MECHANICAL DATA			3
8	ELECTRICAL DATA			3
9	CHARACTERISTICS			4
10	PROTECTION			6
11	ENVIRONMENTAL REQUIREMENTS			6
12	QUALITY, RELIABILITY AND SERVICEABILITY			7
13	SPARE PARTS			7
14	DIAGRAMS			8
	FIGURE 1	BLOCK / WIRING		8
	FIGURE 2	PCB COMPONENT / TRACK LAYOUT	(240-1)	9
	FIGURE 3	PCB COMPONENT / TRACK LAYOUT	(240-2-3)	10
	FIGURE 4	CIRCUIT		11

1 INTRODUCTION

The amplifier is a 240 Watt mono booster amplifier and can operate either on 110/127/220-230 or 240 V, 50-60 Hz AC-supply or on 24 V DC supply.
The amplifier is designed for table-top use and is provided with non-corrosive anti-skid feet. It is possible to mount the amplifier in a 19" rack by removing the cover plate and feet and by using mounting flanges (LBB 1240/10).

2 INPUTS

Sockets

Signal inputs are through 5-pole 180° DIN-sockets and through double cinch sockets, provided at the rear panel.

DIN sockets for : - 1 x interconnection
- 1 x interconnection throughput

Cinch-sockets for : - 1 x interconnection
- 1 x interconnection throughput

Supply cables

A black 3-core mains cord with mains connector, is connected to a combined CEE plug at the rear side (connection + fuse).

DC-supply enter through a two terminal screw connection block

3 OUTPUTS

Sockets

Headphone stereo jack connector (6,3 mm, mono connected) provided at the front panel.

Output for 8 Ohm, 50, 70 and 100 V (free from earth) are provided through mate-N-lock connectors mounted at the rear panel (cable connector delivered with product).

4 SWITCHES

Mains switch : A double pole ON/OFF toggle switch is provided on the front panel.

5 INDICATORS

- Green LED for secondary voltage presence.
- 2 green LED's and 1 red LED as VU-meter.

6 CONTROLS

A rotary volume control is provided on the front panel for master volume control.

7 MECHANICAL DATA

Dimensions : HxWxD 140x440x311 mm

Weight : approx.:170N.

Cooling : Forced cooling.

8 ELECTRICAL DATA

Mains supply

The amplifier can be operated on 110, 127, 220 V ± 10 % and 230, 240 V +6/-10 %, 50-60 Hz frequency.

The amplifier is delivered connected for 220-230 VAC.

Changing mains voltage can be done inside the amplifier cabinet by resoldering on the transformer tags.

DC-supply

Rated DC-supply +24 V (0 V grounded). The amplifier can withstand a maximum deviation of DC-voltage of -10/+20 % and is protected against reversal of the DC-supply.

Fuses

Mains fuse in CEE plug at rear side.
DC-fuse and a battery-supply fuse mounted on PCB.
Thermal fuse is provided inside the mains transformer to prevent overheating of the mains transformer.

Grounding

Inside the amplifier the electrical earth can be disconnected from the mechanical earth by removing a jumper.

Mains current consumption

On 220 V +10 %, no load: 300 mA
With rated output power: 3100 mA

Click

The amplifier is provided with a click suppression circuit for suppression of clicks at output transformer and interconnection during ON-switching of AC-power. Amplifier in working condition within 4 seconds.
Max. click voltage on interconnection < 0,03 V peak-peak.
Max. click voltage on 100 V tap output transformer < 3 V peak-peak.

9 CHARACTERISTICS

All measurements checked at 25°C ambient temperature, 220 V AC, 41 Ohm resistive load connected across 100 V output tap, 1kHz input, rated output power and bass and treble controls at electrically flat position unless otherwise specified.

Inputs

- Interconnection : input sensitivity : 1 V +1 dB -1 dB
  : input impedance : > 20 kOhm

Outputs

- Rated output power.
  while operating on mains : 240 W at 1 kHz, THD = < 1.5 %
  According to IEC 268.
  while operating on DC : ≥ 120 W at 1 kHz, THD = < 1.5 %
  DC voltage 21,6 V. According to IEC 268.
- DIN output power : 240 W Acc.to DIN 45500. Only on mains supply.
- Rated temperature limited output power : According to IEC 65: at 220 V +10%, Tamb = 45°C, 1/8 of rated output power.

for stacking 2 amplifiers: also T.L.O.P. = 1/8 of rated output power
- Max. output voltage : (at 100 V tap) = < 150 V (unloaded at 1 kHz, distortion 5 %).
- Master volume control range : 0 - -70 dB.
- Headphone : output signal : 3 V unloaded, source impedance 68 Ohm
- Interconnection : output signal : 1 V at 2 kOhm (rated output voltage) output impedance: < 200 Ohm
- Output short circuit protected.
- Max. 9 boosters parallel connected.
- Frequency response : Measured at 10 dB below rated output power: within +1/-3 dB between 60 Hz and 18 kHz.
- Power bandwidth : At 2% distortion -3 dB power bandwidth: 115 Hz - 16 kHz.

Distortion

- Total harmonic distortion at rated output power at 1 kHz < 1.5 % at all output taps, with appropriate loads as below:

Output tap	Output voltage	Rated load (resistive)
100 V	100 V	41 Ohm
70 V	70 V	20 Ohm
50 V	50 V	11 Ohm
8 Ohm	44 V	8 Ohm

- Total harmonic distortion at rated output power -20 dB at 1 kHz: < 1%.

Signal/noise

Input connected with 2 kOhm.
S/N > 80 dB between 20 Hz and 20 kHz flat.

LED VU

LED VU on:
-24 dB ± 2 dB green (w.r.t. rated output voltage)
-7 dB ± 2 dB green " " " "
0 dB ± 2 dB red " " " "

10 PROTECTION

The amplifier is protected against the following conditions:
- Switching the amplifier on and off at full power, nominal load connected and IEC 65 noise input signal.
- Input signal of 50 Hz - 40 kHz with 10 dB overdrive.
- Short circuit of the output for 10 minutes with IEC 65 noise signal +10 dB.
- Overload.

The amplifier is stable with 2 meters screened input cable connected with 200 Ohm (max. 50 nF) and 1000 meters unscreened output cable (input and output cable separation minimal 0,5 meters) connected with any combination of load impedance, resistive to open till rated load and capacitive load of 0-1 uF at any combination of volume control positions.

A thermal protector is provided in the mains transformer to prevent overheating of the transformer. The protector operates when the temperature inside the transformer in the vicinity of the protector reaches 147°C/5A and disconnects mains supply from the mains transformer.

11 ENVIRONMENTAL REQUIREMENTS

Climate conditions:
- operating (acc. to UN-D 1639/01).

Ambient temperature:
- rated range of use acc. to specification: -10 to +45°C

Relative humidity:
- rated range of use acc. to specification: 15-90 %

Electromagnetic interference requirements:
- According to UN-D 1639/04 world wide class B.
- According to EN 55022 class B.

Safety requirements:
- according to IEC 65 and BS415. At every point the amplifier carries live voltage is covered with an isolation shield.

Acoustic radiation of amplifier:
- according NR35

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Safety approvals:
- to be applied for Nemko, Demko, Semko.

Radiated interference limits:
- 10 kHz - 30 MHz : UN-D 1639/04 par. 5.4, class B
  : 30 MHz - 1 GHz : UN-D 1639/04 par 5.6, world-wide, class B

Susceptibility to radiation :
- A field of 1 V/m gives an interference < 50 dB related to the rated output power.
- RF-immunity acc. to Nat.Lab not 259/74.
- Immunity to electrostatic discharges (8kV): UN-D 1639/04 par.6.4

12 QUALITY, RELIABILITY AND SERVICEABILITY

M.T.B.F. : > 25.000 hours at 25°C and normal working conditions.
Repair : First line service : fast fault location
Second line service: repair at service station of the N.O.
M.T.T.R. : < 30 minutes

Fault classification : Acc. to MIL stand. 105D.

13 SPARE PARTS

PCB ASSY (240-1)	MAIN	5322 214 11197
PCB ASSY (240-2)	CONTROL	5322 214 11198
PCB ASSY (240-3)	POWER SUPPLY	5322 214 11199
POWER TRANSISTOR	(2SC3281)	5322 130 62673
OUTPUT TRANSFORMER	(OT-SQ20-240W)	5322 140 10481
MAINS TRANSFORMER	(PT-SQ20-120W)	5322 146 10334
MAIN SWITCH		5322 277 11136
MAINS INLET		5322 265 30876
FAN-MOTOR		5322 361 10598
KNOB		5322 414 30152
HANDGRIP		5322 498 10466

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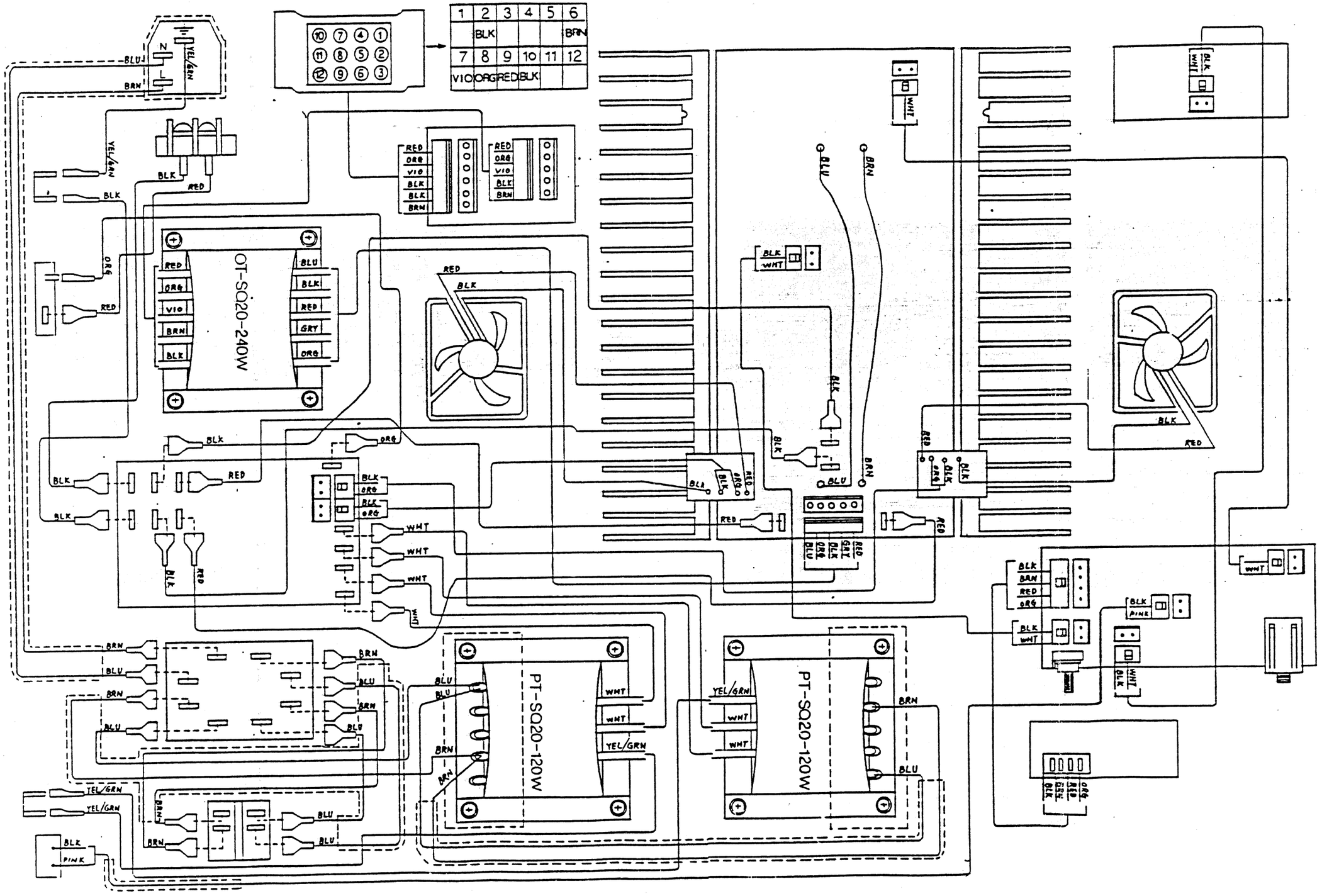
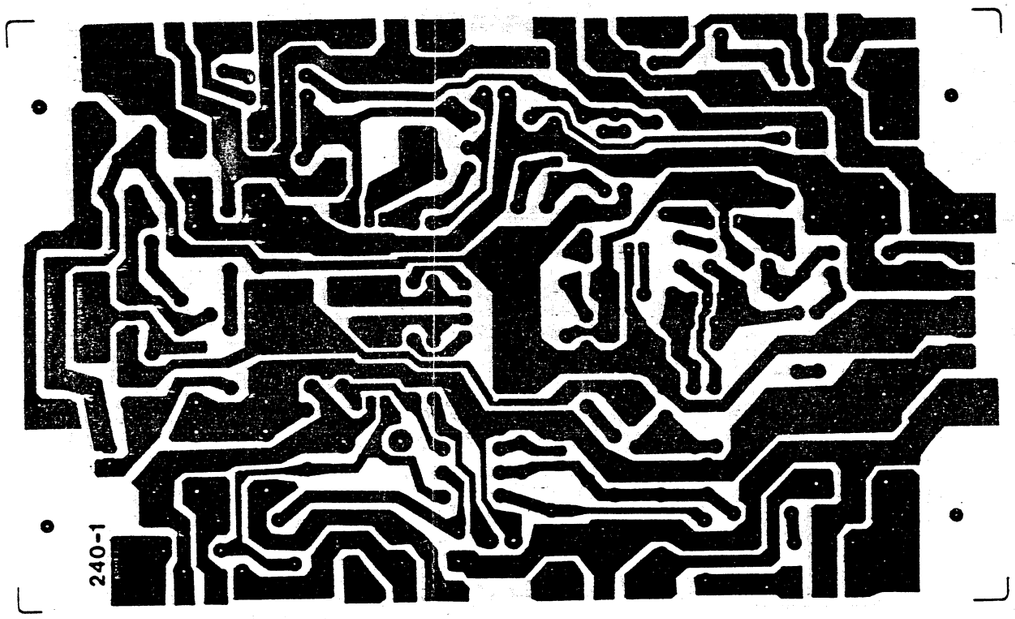


FIGURE 1, PAGE 8
LBB 1240/00
BLOCK / WIRING DIAGRAM



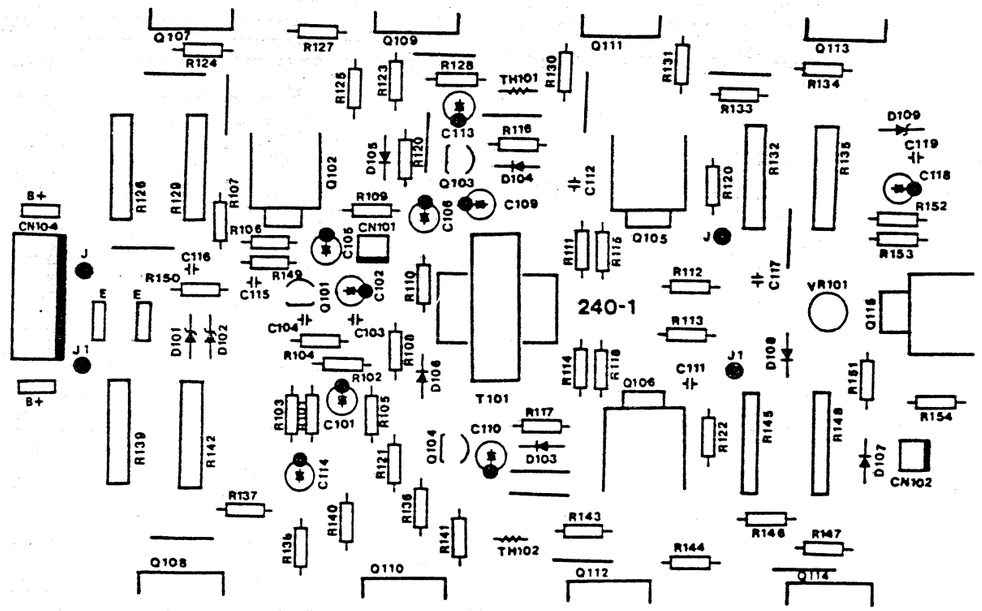
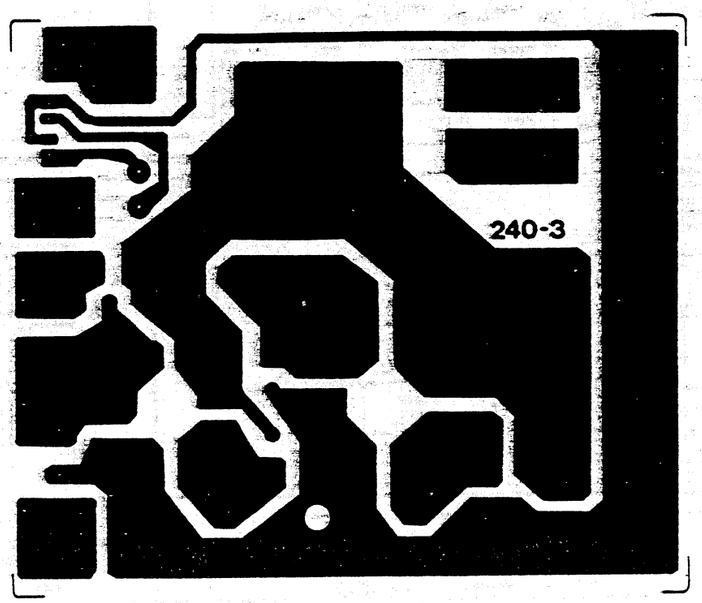


FIGURE 2, PAGE 9
LBB 1240/00
PCB COMPONENT / TRACK LAYOUT (240–1)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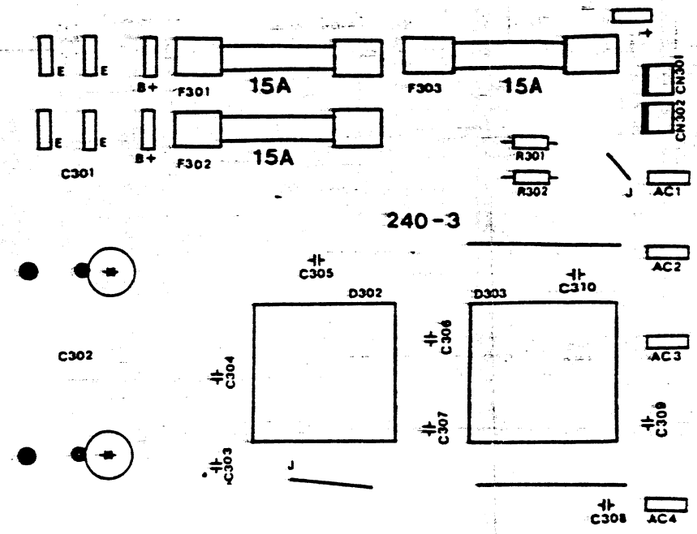
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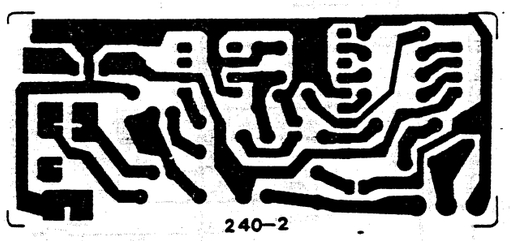
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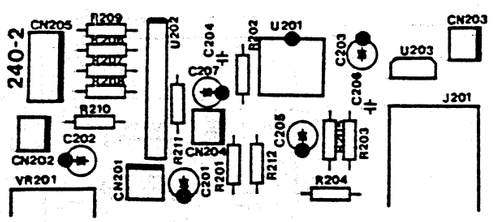
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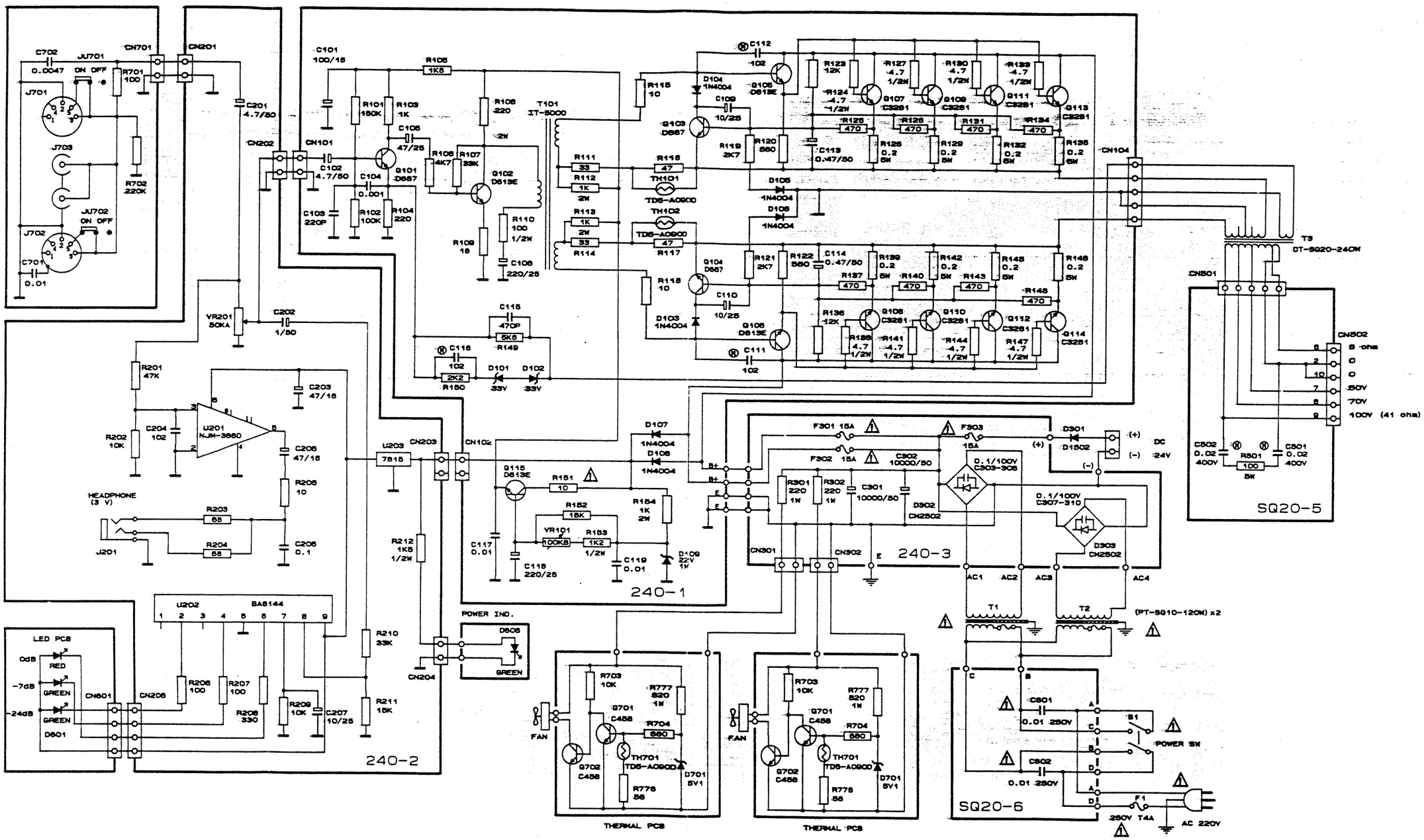

FIGURE 4, PAGE 11
LBB 1240/00
CIRCUIT DIAGRAM